SECTION 07 8400

FIRESTOPPING

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LANL MASTER SPECIFICATION SECTION

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| Rev. 7 Summary of Changes: Major revision adopting content aligned with commercial industry practice. |

Word file at <http://engstandards.lanl.gov>

This template must be edited for each project.  In doing so, specifier must add job-specific requirements.  Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.  Once the choice is made or text supplied, remove the brackets.  The specification section must also be edited to delete requirements for processes, items, or designs that are not included in the project -- and specifier’s notes such as these.  To seek a variance from requirements in the specification sections that are applicable, contact the Engineering Standards Manual Fire [POC](https://engstandards.lanl.gov/POCs.shtml#fire). Please contact POC with suggestions for improvement as well.

When assembling a specification package, include applicable specification sections from all Divisions, especially Division 1, General requirements.

Section developed for ML-4 projects.  For ML-1, 2, and 3 applications, additional requirements and independent reviews should be added if increased confidence in procurement or execution is desired; see ESM Chapter 1 Section Z10 Specifications and Quality sections.
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PART 1 GENERAL

1. SECTION INCLUDES
2. Firestopping of membrane and through penetrations of fire-rated assemblies.
3. Firestopping of joints in fire-rated assemblies[, whether indicated on drawings or not; or None - N/A][, and other openings indicated; or None - N/A].
4. RELATED SECTIONS
5. 01 2500 - *Substitution Procedures*
6. 01 4000 - *Quality Requirements (Non-nuclear)*
7. 07 0553 - *Fire and Smoke Assembly Identification*
8. 09 2116 - *Gypsum Board Systems*
9. REFERENCES
10. ASTM International
	* 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
		2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
		3. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems
		4. ASTM E1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems
		5. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems
		6. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems
		7. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus
		8. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers
		9. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies
		10. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
11. California Department of Public Health
	1. CA/DHS/EHLBR/R-174 Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers. Including addenda.
12. International Code Council
	1. ICC IBC – International Building Code
13. ITS
	1. ITS (DIR) – Directory of Listed Products
14. FM Approvals
	1. FM 4991 - Approval Standard of Firestop Contractors
	2. FM (AG) - FM Approval Guide
15. South Coast Air Quality Management District (SCAQMD)
	1. SCAQMD 1168 - Adhesive and Sealant Applications
16. Underwriters Laboratories (UL) Inc.
	1. UL 1479 - Standard for Fire Tests of Penetration Firestops
	2. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems
	3. UL (DIR) - Online Certifications Directory
	4. UL (FRD) - Fire Resistance Directory
17. ACTION SUBMITTALS
18. Product Data: Provide data on [product characteristics; performance ratings; limitations; and \_\_\_\_\_\_\_\_].
19. Engineering Judgements: Provide Engineering Judgements (EJ) for instances where conditions are not commercially addressed by a Nationally Recognized Testing Laboratory (NRTL) listing. EJs shall be prepared by the firestopping product manufacturer or qualified Professional Engineer. EJs shall not be substituted for available assemblies or systems. Reliance upon a single firestopping material or manufacturer shall not be justification for submitting an EJ.
20. Mock-ups (see Article 1.7 Mock-Ups for more details).
21. Sustainable Design Submittal:
22. VOC Content - Submit VOC content documentation for nonpreformed materials.
23. Certify firestopping products contain no added urea-formaldehyde resins
24. INFORMATIONAL SUBMITTALS
25. Schedule of Firestopping: List [each type of penetration; fire rating of the penetrated assembly; firestopping test or design number; and \_\_\_\_].
26. Installation Instructions: Provide the manufacturer’s preparation and installation instructions.
27. Installer's Qualifications: Provide a statement of the installer’s qualifications.
28. Material Safety Data Sheets.
29. At Closeout: Inspection Reports.
30. QUALITY ASSURANCE

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Ensure that inspection of firestopping is included on the Statement of Special Inspections.

DOE-STD-1066 recommends using installers qualified in accordance with FM 4991 Standard for the Approval of Firestop Contractors. Weigh this recommendation against magnitude and complexity of scope.

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1. Fire Testing: Provide firestopping assemblies of designs that provide the required fire ratings when tested in accordance with ASTM E1966 or ASTM E814.
2. Listing in [UL (FRD); FM (AG); ITS (DIR); or \_\_\_] will be considered as constituting an acceptable test report.
3. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
4. Submission of actual test reports or manufacturer’s Engineering Judgement is required for assemblies for which none of the above substantiation exists.
5. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
6. Installer Qualifications: Company specializing in performing the work of this section and:
7. Trained by manufacturer.
8. [Accredited with Factory Mutual Approval Standard [FM 4991](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=FMAPPROVAL%204991).]
9. Verification of at least [five; or \_\_\_\_\_] satisfactorily completed projects of comparable size and type.
10. MOCK-UPS
11. See Section 01 4000, *Quality Requirements* – *Non-Nuclear* for additional requirements.
12. Install [one; or \_\_\_] firestopping assembly [representative of each fire rating design required on project; \_\_\_\_\_\_\_; or None - N/A].
13. Where one design may be used for different penetrating items or in different [wall; floor; or \_\_\_\_\_\_\_] constructions, install one assembly for each different combination.
14. Where firestopping is intended to fill a linear opening, install at least [1 linear foot; \_\_\_ linear foot] of firestopping.
15. Obtain approval of [LANL Fire Marshal (Authority Having Jurisdiction (AHJ)); or \_\_\_\_\_\_] before proceeding.
16. If accepted, mock-up will represent minimum standard for this work.
17. If accepted, mock-up may remain as part of this work. Remove and replace mock-ups not accepted.
18. DELIVERY STORAGE AND HANDLING
19. Deliver products to the project site in original unopened containers or packages with intact and legible manufacturer’s labels that identify the product and the manufacturer.
20. Store and handle products in accordance with manufacturer’s written instructions and Material Safety Data Sheet (MSDS).
21. FIELD CONDITIONS
22. Provide prepared openings that have been coordinated with the through penetrant and the firestopping system.
23. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and until fully cured after installation of materials.
24. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

1. MANUFACTURERS
2. Subject to compliance, available manufacturers include, but are not limited to:
3. [3M Fire Protection Products](http://www.3m.com/firestop/#sle) [ \_\_\_\_\_; or None - N/A].
4. [Everkem Diversified Products, Inc.](http://www.everkemproducts.com/#sle) [Intumescent Fire-Rated Putty Pads; Intumescent Firestop Collars; Intumescent Wrap Strips; Firestop 814+; Firestop Pillows; Flame Guard 814; Fire Caulk 136; Fire Seal 136; Fire-Rated Putty Sticks; \_\_\_\_\_; or None - N/A].
5. [Grabber Construction Products, Inc.](http://www.grabberman.com/#sle) [GrabberGard EFC; GrabberGard EFS; GrabberGard IFC; \_\_\_\_\_; or None - N/A].
6. [Hilti, Inc.](http://www.hilti.com/#sle) [ \_\_\_\_\_; or None - N/A].
7. [HoldRite](http://www.holdrite.com/#sle), a Brand of Reliance Worldwide Corporation [HydroFlame 100 Intumescent Firestop Sealant; HydroFlame 200 Intumescent Firestop Sealant; \_\_\_\_\_; or None - N/A].
8. [MarinoWARE](http://www.marinoware.com/#sle) [ \_\_\_\_\_; or None - N/A].
9. [Nelson FireStop Products](http://www.nelsonfirestop.com/#sle) [ \_\_\_\_\_; or None - N/A].
10. [Passive Fire Protection Partners](http://www.firestop.com/#sle) [Firestop 3600EX; Firestop 4800DW; Firestop 5100SP; MP1 - Putty Pads; PPC Collars; WS1 - Intumescent Strip; Firestop Pillow; \_\_\_\_\_; or None - N/A].
11. [RectorSeal](http://www.rectorseal.com/firestop-solutions/#sle), a CSW Industrials Company [Metacaulk 150+ General Purpose Firestop Sealant; Metacaulk Joint Strips; Metacaulk Wrap Strips; Metacaulk Putty Pads; Metacaulk Cast-In-Place Device (CID) Firestop for Through Floor Penetration; Metacaulk 1200 Caulk Grade and Spray Elastomeric Firestop Sealant; Metacaulk 1000 Intumescent Firestop Sealant; Metacaulk Intumescent Sleeves; Metacaulk Intumescent Collars; Metacaulk 835+ Firestop Silicone Sealant and Spray; \_\_\_\_\_; or None - N/A].
12. [Specified Technologies Inc.](http://www.stifirestop.com/#sle) [ \_\_\_\_\_; or None - N/A].
13. [Tremco Commercial Sealants & Waterproofing](http://www.tremcosealants.com/#sle) [TREMstop Acrylic; TREMstop Acrylic Spray; TREMstop IA+; TREMstop Fyre-Sil; \_\_\_\_; or None - N/A].
14. Substitutions: [Alternate products may be accepted, follow Section 01 2500 - Substitution Procedures; or Not permitted – No substitutions].
15. MATERIALS
16. Firestopping Materials: [Any materials meeting requirements; Foam; Caulk or putty; Manufactured device; or \_\_\_\_\_].
17. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by [SCAQMD 1168](http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xi).
18. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero (0) in accordance with [ASTM G21](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20G21).
19. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
20. Fire Ratings: Refer to drawings for required systems and ratings.
21. FIRESTOPPING ASSEMBLY REQUIREMENTS

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Designer shall verify that the properties specified below are indicated on the drawings.

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1. Designer shall verify that the properties specified below are indicated on the drawings.
2. Perimeter Fire Containment Firestopping: Use system that has been tested according to [ASTM E2307](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2307) to have fire resistance F Rating equal to required fire rating of floor assembly.
3. Movement: Provide systems that have been tested to show movement capability as indicated.
4. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
5. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
6. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
7. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to [ASTM E2837](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2837) to have fire resistance F Rating equal to required fire rating of wall assembly.
8. Movement: Provide systems that have been tested to show movement capability as indicated.
9. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, except perimeter, where both are fire-rated: Use system that has been tested according to [ASTM E1966](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E1966) or [UL 2079](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=UL%202079) to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
10. Movement: Provide systems that have been tested to show movement capability as indicated.
11. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
12. Water tightness: Provide systems that have been tested to show W Rating as indicated.
13. Listing by [FM (AG)](http://www.fmglobal.com), [ITS (DIR)](https://www.intertek.com/directories/), [UL (DIR)](http://www.ul.com/), or [UL (FRD)](http://www.shopulstandards.com) in their certification directories will be considered evidence of successful testing.
14. Through Penetration Firestopping: Use system that has been tested according to [ASTM E814](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E814) to have fire resistance F Rating equal to required fire rating of penetrated assembly.
15. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
16. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
17. Water tightness: Provide systems that have been tested to show W Rating as indicated.
18. Listing by [FM (AG)](http://www.fmglobal.com), [ITS (DIR)](https://www.intertek.com/directories/), [UL (DIR)](http://www.ul.com/), or [UL (FRD)](http://www.shopulstandards.com) in their certification directories will be considered evidence of successful testing.
19. FIRESTOPPING SYSTEMS

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Retain applicable paragraphs below, and list specified systems and assemblies. Alternatively, firestopping may be scheduled and detailed on the drawings.

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1. Firestopping: [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
2. Fire Ratings: Use system that is listed by [FM (AG); ITS (DIR); UL (FRD); or \_\_\_\_\_] and tested in accordance with [ASTM E814; ASTM E119; UL 1479; or \_\_\_\_\_] with F Rating equal to fire rating of penetrated assembly and [minimum; or None - N/A] T Rating [of \_\_\_\_; or Equal to F Rating] and in compliance with other specified requirements.
3. Fire Ratings: See drawings for required systems and ratings.
4. Firestopping at [Uninsulated Metallic Pipe and Conduit Penetrations; or \_\_\_\_\_], of diameter [4 inches; \_\_\_ inches] or less: [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
5. Floors: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
6. Roof Slabs: [ITS (DIR); FM; UL; or \_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
7. [Fire Walls; 4-hour Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3; or \_\_\_] hour.
8. [Exit Enclosure Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
9. [Corridor Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; or \_\_\_] hour.
10. [Other Interior Partitions; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3/4; 1; or \_\_\_] hour.
11. Firestopping at [Combustible Pipe and Conduit Penetrations; or \_\_\_\_\_], of diameter [4 inches; \_\_\_ inches] or less: [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
12. Floors: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
13. Roof Slabs: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
14. [Fire Walls; 4-hour Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3; or \_\_\_] hour.
15. [Exit Enclosure Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
16. [Corridor Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; or \_\_\_] hour.
17. [Other Interior Partitions; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3/4; 1; or \_\_\_] hour.
18. Firestopping at [Cable Tray Penetrations; or \_\_\_\_\_\_]: [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
19. Floors: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
20. Roof Slabs: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
21. [Fire Walls; 4-hour Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3; or \_\_\_] hour.
22. [Exit Enclosure Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
23. [Corridor Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; or \_\_\_] hour.
24. [Other Interior Partitions; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3/4; 1; or \_\_\_] hour.
25. Firestopping at [Cable Penetrations, not in Conduit or Cable Tray; or \_\_\_\_\_]: [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
26. Floors: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
27. Roof Slabs: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
28. [Fire Walls; 4-hour Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3; or \_\_\_] hour.
29. [Exit Enclosure Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
30. [Corridor Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; or \_\_\_] hour.
31. [Other Interior Partitions; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3/4; 1; or \_\_\_] hour.
32. Firestopping at [Control; and Expansion] Joints (without Penetrations): [Any material meeting requirements.; Foam.; Caulk or putty.; Manufactured device.; \_\_\_\_\_\_.; or None - N/A]
33. Between Top of Fire-Rated Walls and Bottom of Slab Above: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; 1; or \_\_\_] hour.
34. Floors: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
35. Roof Slabs: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
36. [Fire Walls; 4-hour Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3; or \_\_\_] hour.
37. [Exit Enclosure Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [2; 1-1/2; or \_\_\_] hour.
38. [Corridor Walls; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; or \_\_\_] hour.
39. [Other Interior Partitions; or \_\_\_\_\_]: [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [3/4; 1; or \_\_\_] hour.
40. Firestopping Between Edge of Floor Slab and [Curtain Wall; or \_\_\_\_\_] (without Penetrations): [Fiber firestopping with smoke seal coating; \_\_\_\_\_\_\_; or None - N/A][ ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_ [, T Rating 3/4 hour;, T Rating 1 hour;, T Rating \_\_\_ hour;, F Rating 3/4 hour;, F Rating 1 hour;, F Rating \_\_\_ hour; or None - N/A].
41. Firestopping Between Top of Partition Wall and [Roof Slab; Floor Slab; or \_\_\_\_\_]: [Fiber firestopping with smoke seal coating; or \_\_\_\_\_] [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, F Rating [1-1/2 hour; 1 hour; or \_\_ hour][, provide at locations as indicated on drawings;, \_\_\_\_\_\_\_; or None - N/A].
42. Temporary Firestopping: [Reusable intumescent shapes; or \_\_\_\_\_]; [ITS (DIR); FM; UL; or \_\_\_\_\_] Design No. \_\_\_\_, [T; or F] Rating [1-1/2; 1; or \_\_\_] hour [provide at locations as indicated on drawings; or None - N/A].

PART 3 EXECUTION

* 1. EXAMINATION
1. Verify openings are ready to receive the work of this section.
	1. PREPARATION
2. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
3. Remove incompatible materials that could adversely affect bond.
4. Install [backing; damming; or \_\_\_\_\_\_\_\_\_] materials to prevent liquid material from leakage.
	1. INSTALLATION
5. Notify the LANL Subcontract Technical Representative (STR) seven calendar days in advance of firestopping installation.
6. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
7. Repairs and modifications to existing firestopping systems shall be in accordance with manufacturer’s installation instructions, and applicable listing detail.
8. Do not cover installed firestopping until inspected by [LANL inspector or Independent Testing Agency; and LANL Fire Marshal (Authority Having Jurisdiction)].
9. Install labelling. Labelling shall indicate: Installer, Date installed, Detail used and Engineering Judgement number if applicable.

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Delete Paragraph when work is not for TA-55 or CWF.

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1. Complete the Membrane and Through Penetration Spreadsheet and ensure that the applicable fire barrier drawings are updated as required as identified in TA55-AP-123 and TA55-AP-124.  Provide a completed copy of the spreadsheet to the appropriate barrier system engineer.
	1. FIELD QUALITY CONTROL
2. Testing Agency: Inspection agency employed and paid by LANL, will examine penetration firestopping in accordance with [ASTM E2174](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2174) and [ASTM E2393](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2393).
3. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.
	1. CLEANING
4. Clean adjacent surfaces of firestopping materials.
	1. PROTECTION
5. Protect adjacent surfaces from damage by material installation.

END OF SECTION

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Do not delete the following reference information:

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THE FOLLOWING STATEMENT IS FOR LANL USE ONLY

This project specification section is based on LANL Master Specification Section 07 8400 Rev. 7, dated July 17, 2024.